Amendments to the Specification:

Please replace the third paragraph on page 1 with the following amended paragraph:

A1

One very well known type of an image sensor is the charge-coupled device (CCD). Integrated circuit chips containing CCD image sensors are expensive because of the specific manufacture process required. The CCD also requires relatively large power dissipation, because of the required clock signals and the high voltage that is usually needed. Compared with the CCD image sensor, ~~a~~ CMOS active pixel sensors (APS) ~~has~~ have attracted much attention recently because of its capability of monolithic integration of the circuits of control, drive and signal processing into a single sensor chip. The advantages of the CMOS APS imager are: low voltage operation and low power consumption, process compatibility with on-chip electronics, and potentially lower cost, as compared with the conventional CCD. This is derived from the wide availability of a standard CMOS manufacturing process.

Please replace the first full paragraph on page 2 with the following amended paragraph:

A2

Figure 1A illustrates the architecture of a conventional CMOS image sensor of 512 by 512 active pixels formed on a single integrated circuit chip. Some examples of the conventional CMOS image sensors can be seen in US Patent Appln. No. 09/103,959, US Patent Application entitled "INTERLACE OVERLAP PIXEL DESIGN FOR HIGH SENSITIVITY CMOS IMAGE SENSORS," and USP. No. 5,900,623, both of which were assigned to the same assignee of the present application~~, and USP. No. 5,900,623~~. An image sensor core 19 comprises a two-dimensional pixel array of light detecting elements 10 which include identical circuitry shown in Figure 1B. When sensing, an image is focused on the image sensor core 19 such that different portions of the image impinges on each light detecting element 10. As shown in Figure 1B, each light detecting element 10 comprises a photodiode 20, or an equivalent photo sensing device, such as a photogate, bipolar phototransistor, etc., the conducting current of which is in proportion to the intensity of the light impinging upon the junction of the photo sensing device.

Please replace the fourth paragraph on page 5 with the following amended paragraph:

A3

According to one preferred embodiment of the present invention, another access transistor coupling each of two adjacent row pixel photodiodes in the column direction, only half the number of source followers and access transistors than the conventional CMOS image sensor are needed, thus significantly reducing the number of elements in the CMOS sensors.

Please replace the paragraph bridging page 11 and 12 with the following amended paragraph:

A4

As mentioned above, the amplifier transistor ~~T4~~ T5 is biased by the signal RX, causing the signal between nodes Nd and Ng to be amplified. According to the software simulation result, the overall sensitivity of the present invention is as much as eight times greater than the conventional scheme. One additional advantage of the present invention is

that odd and even fields are passed through the same amplifier transistor ~~T4~~T5, source follower T2 and access transistor T3, which significantly mitigates pattern noise due to process variations in the fabrication of these transistors. It is also notable that rather than 512 transistors, as in the case of conventional approach, according to the specific scheme of the present invention, only 256 reset transistors ~~T5~~T1, source follower transistors T2, and access transistors T3 are needed, which significantly lowers the manufacturing costs, reduces the size of the image sensor core, and also reduces power consumption. As a result, the preferred embodiment method can improve the sensitivity of CMOS active pixel image sensor significantly, and makes its performance similar to that of a CCD.